-- CRESCEND TECHNOLOGIES --

Power Amplifier AMP-4-150-30-00-1.

User Manual.

1. General description.

The power amplifier (PA) is a one amplifying stage unit, working in AB- or B-class operation mode. PA contains the power control, status monitoring and protecting circuitries, as well as of the voltage regulator, supplying RF and main control circuits.
The output power may be controlled either by the external analog signal (remote control), or by potentiometer, accessible from the front panel (local control).
The voltage regulator turns on, when all four of the following conditions are present:

- remote control voltage (in the case of remote control) is greater than 1 V;
- input power is not less than 0.5 W;
- the case temperature does not exceed + 85°C;
- power supply voltage does not exceed 17 V.

If any of three first mentioned conditions is not met, unit remains in stand-by mode. There is an additional current consumption in the overvoltage mode.
PA has the forced air cooling system and is protected against the mismatch of the load, overheating and overvoltage. The protection against the load mismatch smoothly reduces the output power, when the load VSWR grows over 2:1.
Three LED at the front panel indicate the unit status. Also, PA has three outputs (open collector type) for remote status monitoring. In the case of alarm, the level at the suitable output becomes LOW.

2. General parameters.

- Frequency range, MHz . . . . . 136 – 174;
- Output power, W;
  - nominal . . . . . ≥ 30;
  - minimum set by local or remote control . . . . . ≤ 20;
  - in stand-by mode operation . . . . . < 0.1;
- Harmonic level at the output, dBc . . . . . < -70;
- Reversed intermodulation attenuation, dB . . . . . ≥ 40;
- Input power, W:
  - nominal 6.0;
  - maximum continuous 8.0;
  - maximum for less than 1 min with not less than 1 min pause 10;
  - guaranteeing the stand-by mode operation . . . . . < 0.5;
- Input VSWR . . . . . ≤ 1.8;
- Carrier attack time, ms . . . . . < 4.0;

- Remote control voltage, V:
  - working range . . . . . 0 – 9.5;
  - guaranteeing the nominal output power . . . . . > 7.0;
  - guaranteeing the stand-by mode operation . . . . . < 1.0;

- Current consumption by the remote control input, mA . . . . . < 1.5;
- Fan rotation thresholds: heatsink temperature, °C:
  - activation . . . . . +(60±5);
  - reset . . . . . ≥ + 40;
- Overheat protection thresholds: heatsink temperature, °C:
  - activation . . . . . +(85±5);
  - reset . . . . . +(70±7);
- Overvoltage protection thresholds, V;
  - activation . . . . . 17.9±0.4;
  - reset . . . . . 17.3±0.3;
- Load mismatch protection activation threshold, VSWR . . . . . 2.1 – 4.0;
- LOW level voltage at remote monitoring output, V . . . . . ≤ 1.0;
- Current, allowed for incoming in any remote monitoring output, mA . . . . . <10;
- Power supply voltage, V:
  - working range . . . . . 10.0 – 17.0;
  - allowed voltage increase . . . . . up to 24.0;
  - guaranteeing the nominal output power . . . . . 13.8 – 17.0;
- DC current, A:
  - nominal 5.0;
  - maximum 5.7;
  - in stand-by mode operation . . . . . < 0.0025;

- Ambient temperature range, °C . . . . . -40…+65;
- Input and output RF connectors . . . . . N-type (F);
- DC connector . . . . . 32 pin (M).

3. Construction.

Unit is realized as a cassette – see Fig. 2.
There are at the front panel:
- RF connectors (going through holes in the front panel);
- Fan, which pushes the air inside unit;
- Status LED (going through holes in the front panel);
- Access hole to the power set potentiometer;
- Handle for moving the unit into/from a sub rack;
- Four quick release fasteners for fastening the unit in a sub rack.

Front panel dimensions are 5.585”(W) x 5.055”(H). The full length of PA does not exceed 8.2”.

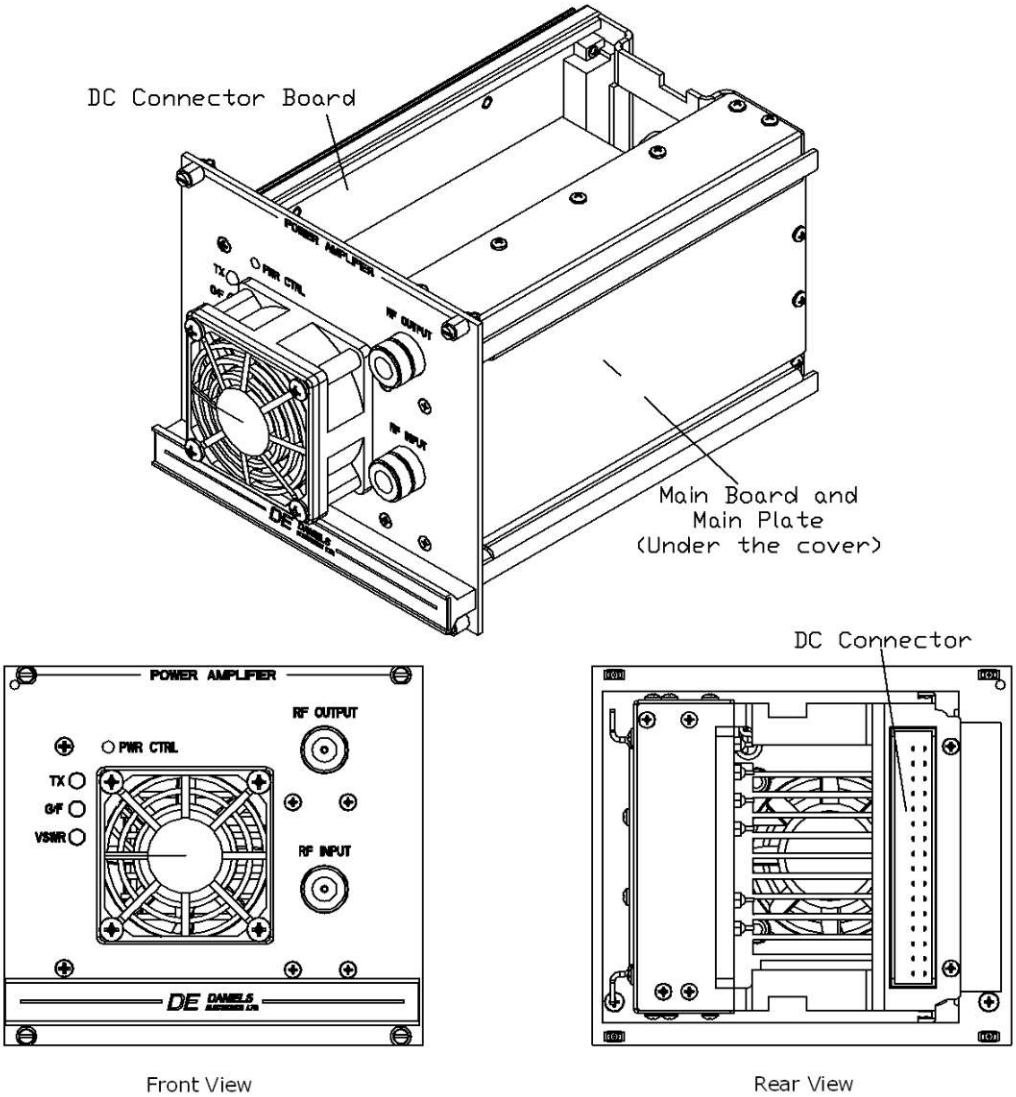

Fig. 2. Construction.

PA contains two p/c boards: Main Board and DC Connector Board.
The Main Board is placed inside the shielded compartment, being fastened on the flat metal surface of Main Plate. The heatsink is attached to the outer side of Main Plate, as well as the fan controlling thermal switch.

4. Installation Instruction.

PA is intended for placing and operating in the special place in CODAN's sub rack.
Before the unit installation, make sure that:

- The sealing label exists and is not damaged;
- No mechanical damages are;
- No strange parts or dust is inside RF and DC connectors;
- Jumper JP1 and/or JP2 in DC Control Board is cut, if LED indication at the front panel is not desirable – see Fig.3;
- 3-pin connector is in position, correct for the chosen power control method – see Fig.4;

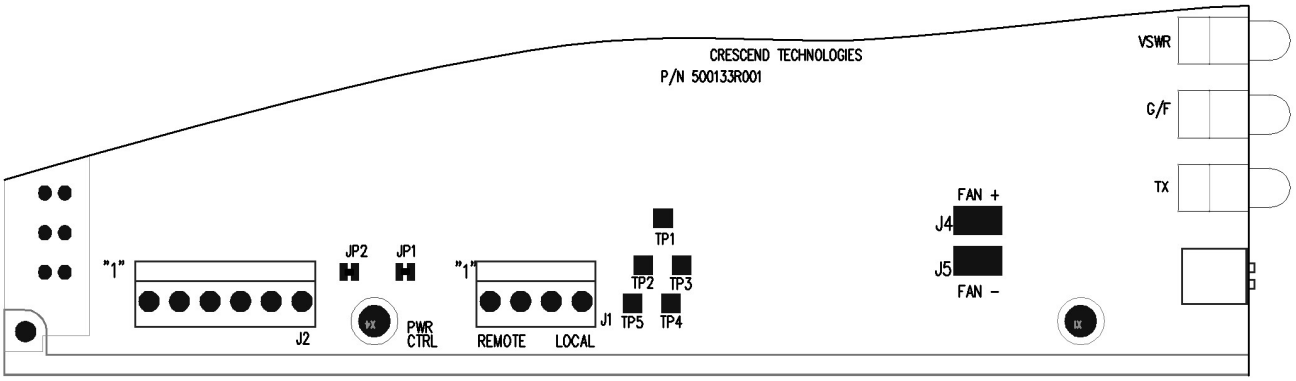

Fig. 3

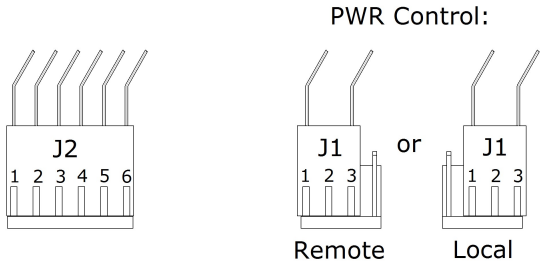

Fig. 4

Fig.5

- DC cables, going to DC Connector board, are inside the unit outline;
- All four quick realize fasteners are in correct position: their screws shall be deepened into the plastic cylinders and slots in heads of screws shall be directed horizontally, as it is showed in Fig. 5.

Provide the correct mutual positioning of leading rails of PA and sub rack, then slide PA all way through inside a sub rack. Press and turn screws of all quick release fasteners by 90° clockwise or counter clockwise, until PA is fixed in sub rack.
Connect RF cables to RF connectors at the front panel of PA.

5. Unit Status Monitoring.

There are two features of unit status monitoring: LED at the Front Panel and signals at pins of DC connector.

LED “TX” is on, when the output power is not less than 20W.
LED “G/F” is on, when the power supply voltage exceeds 17 V (in active mode only), or if the temperature of heatsink exceeds +85°C (in both active and stand-by modes).
LED “VSWR” is on, if the load VSWR is greater than 2:1.

LOW level of voltage (less than 2 V) at the monitoring pin of DC connector witnesses about the alarm:

- at pin B24: The power supply voltage exceeds 17 V (appears in active mode only), or heatsink temperature is greater than +85°C;
- at pin B26: The output power is less than 20 W (appears in active mode only);
- at pin Z26: The load VSWR is greater than 2:1(appears in active mode only).

